

ABSTRACT

This invention concerns the fabrication of nanoscale and atomic scale devices. The method involves creating one or more registration markers. Using a SEM or optical microscope to form an image of the registration markers and the tip of a scanning tunnelling microscope (STM). Using the image to position and reposition the STM tip to pattern the device structure. Forming the active region of the device and then encapsulating it such that one or more of the registration markers are still visible to allow correct positioning of surface electrodes. The method can be used to form any number of device structures including quantum wires, single electron transistors, arrays or gate regions. The method can also be used to produce 3D devices by patterning subsequent layers with the STM and encapsulating in between.